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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/729,428

12/05/2003

Steven Eckroad

1036/3US

8412

68553 7590 04/09/2008
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EXAMINER

CAVALLARI, DANIEL J

ART UNIT

PAPER NUMBER

2836

MAIL DATE

DELIVERY MODE

04/09/2008

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/729,428	Applicant(s) ECKROAD ET AL.	
	Examiner DANIEL CAVALLARI	Art Unit 2836	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 December 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4-17,19-22,24-27 and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4-17,19-22,24-27 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/6/07, 3/14/08</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/6/2007 has been entered.

Claim Objections

Claim 1 is objected to because of the following informalities:

- The claim states "a static converter" however a "static converter" does not refer to a particular converter therefore does not add any particular limitations in regard to the converter. A "static converter" will therefore be read on by any converter, absent of any explicit limitations further limiting the converter.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 4, 6-10, 12, 13, 17, & 19-21 are rejected under 35 U.S.C. 102(e) as being anticipated by Rajagopalan (US 2003/0160514)

In regard to Claim 1

An electrical power source comprising:

- A static converter (10, Figure 1) continuously converting power to a fixed frequency AC output power (See Figure 7 &
- An electrical power storage subsystem (battery, 150) (See Figure 1).
- An electrical power generator (See Figure 6).
- A control system (160) coupled with the static converter (10), the electrical power storage subsystem and the electrical power generator, such that continuous backup power is provided to the load by both the electric power storage subsystem and the electrical power generator simultaneously and cooperatively (See Figure 7 & Paragraphs 52-54) [read on by the DC bus].

In regard to Claim 2

- Wherein the control system provides a plurality of modes of operation including at least a static compensator (read on by “clean” power mode during normal operation, See Paragraph 24) and an uninterruptible power supply operational mode (See Paragraph 23).

In regard to Claim 4

- Wherein the control system provides a multiplicity of generator connection modes, including a dc-connected generator mode (read on by a battery) and an ac-connected generator mode (See Figures 4 & 7 & Paragraph 52).

In regard to Claim 6

- Wherein the control system comprises a current control system (160, Fig 1) coupled with the electrical power storage subsystem and the electrical power generator and a voltage control system (160, Fig 1) coupled with at least the electrical power storage subsystem [The Examiner notes that the control system 160, control both current and voltage (power), See Paragraph 26].

In regard to Claim 7

- Wherein the current control system includes a current controller (560, Fig 5) coupled with a pulse pattern generation unit (530, Fig 5) and the pulse pattern generation unit couples with the electric power storage subsystem and is configured to supply control signals to the electrical power storage subsystem (See Paragraph 46).

In regard to Claim 8

- Wherein the voltage control system includes a VSC (560, Fig 5) controller coupled with the pulse pattern generation unit and the pulse pattern generation unit couples with the electrical power storage subsystem and is configured to

supply control signals to the electrical power storage subsystems (ie. charge or discharge) (See Paragraph 46).

In regard to Claim 9

- Wherein the energy storage system includes a VSC (560) coupled with an energy storage unit, wherein the energy storage unit is configured to store electrical energy and the VSC is configured to draw energy from the energy storage unit and supply electrical energy to the energy to the energy storage unit (read on by charging and discharging the battery, See Paragraph 46).

In regard to Claim 10

- Wherein the control system further comprises a detection and mode selection unit (160) couple with the current control and voltage control (160) and configured to determine the mode of operation of the apparatus (See Paragraph 23).

In regard to Claim 12

- Wherein the storage system comprises a battery (See Figure 1).

In regard to Claim 13

- Wherein the storage system comprises a flywheel (See Figure 6).

In regard to Claim 17

- Wherein the control system (160, Fig 1) includes at least one storage control module (160) specifically configured for controlling the operation of the electrical power storage subsystem (See Paragraph 38).

In regard to Claim 19

- Wherein the storage control module is chosen from the group comprising a software configuration, a hardware configuration, and a combination of a software and a hardware configuration (See Paragraph 38).

In regard to Claim 20

- Wherein the control system includes at least one electrical power generation control module (160) specifically configured for controlling the operation of the electrical power generator (See Paragraph 38).

In regard to Claim 21

- Wherein the electrical power generator control module (160) is interchangeable with a second electrical power generator control module that is specifically configured for controlling the operation of a second electrical power generator [The Examiner notes that the software unit (160) is programmable and is interchangeable with a duplicate of the power supply system (See Paragraph 38)].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rajagopalan in view of Gillette (US 6,198,176).

Incorporating all arguments above in regard to the electrical power source taught by Rajagopalan, Rajagopalan teaches a controller (160, Figure 1) however fails to explicitly teach the use of a “feedback loop”.

Gillette teaches a UPS system comprising a controller (70, Figure 1) which comprises a feedback loop (See Column 5, Lines 14-39). It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the feedback loop taught by Gillette into the power system of Rajagopalan. The motivation would have been to provide control and power correction to the output via the feedback loop which is well known and highly used in the feed as a means for output power correction.

Claims 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rajagopalan (US 2003/0160514) in view of Andarawis et al. (US 2003/0229423).

Rajagopalan teaches the use of a static switch (20) which is opened and closed to a utility line in response to the detection and mode selection unit (160) (See Paragraph 23) but fails to explicitly teach the use of a solid state breaker.

Andarawis et al. (hereinafter referred to as Andarawis) teaches the use of solid state breakers (See Paragraph 28) used in a power generation system to connect a power feed to a load (See Figures 2 & 5).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the solid state breaker taught by Andarawis in place of the switch taught by Rajagopalan who is silent in regard to the specific type of switch used. The motivation would have been to provide a simple, well known and well available switch capable of handling high voltages and high currents.

Claims 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rajagopalan in view of Kehril et al. (US 6,392,856).

Incorporating all arguments above, Rajagopalan teaches the use of a plurality of sources (See Figure 1 & Paragraphs 55-56) but fails to explicitly teach the use of superconducting magnetic energy.

Kehril et al. teach a power supply system incorporating superconducting magnetic energy storage (See Column 5, Line 56 to Column 6, Line 11).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the superconducting magnetic energy storage taught by Kehril et al. with the power supply system of Hasegawa. The motivation would have

been to take advantage of the improved power quality characteristics of superconducting magnetic energy including the short time delay during charge and discharge.

Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rajagopalan in view of Wacknov et al. (US 2002/0175522).

Incorporating all arguments above, Rajagopalan teaches the use of a plurality of sources (See Figure 1 & Paragraphs 55-56) but fails to explicitly teach the use of an electrochemical capacitor.

Wacknov et al. teaches a power supply system incorporating various different power supply sources including a electrochemical capacitor and flywheel (See Paragraph 63).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate an electrochemical capacitor as taught by Wacknov et al. in the system of Rajagopalan. The motivation would have been to take advantage of the electrochemical capacitors high rate of charge and discharge and high cycle efficiency.

Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Rajagopalan in view of Jungreis et al. (US 6,134,124).

Incorporating all arguments above, Rajagopalan teaches the use of a plurality of sources (See Figure 1 & Paragraphs 55-56) but fails to explicitly teach the use of compressed air energy storage.

Jungreis et al. teach a UPS system incorporating compressed air energy storage (See Column 2, Lines 42-48).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the compressed air energy storage taught by Jungreis et al. with the system of Rajagopalan. The motivation would have been to take advantage of the low energy consumption of compressed air energy storage systems.

Claims 22, 24-27, & 29 are rejected under 35 U.S.C. 102(a) as being anticipated by Welches et al. (US 2004/0084965).

In regard to Claim 22

- A static compensator (read on by voltage compensation, See Paragraph 47).
- A UPS (See Paragraph 45).
- An electric power generator (100, Fig 5).
- A multimode control system (See Figure 6) coupled with the STATCOM, the UPS, and the electrical power generator, wherein the multimode control system controls the operation of each of the STATCOM, UPS, and the electrical power generator, such that the STATCOM, the UPS, and the electrical power generator simultaneously and cooperatively provide reactive power and real electrical power in any combination (read on by VARS compensation) before, during, or

after a disturbance or outage on the electrical grid (See Paragraphs 43-48) [The Examiner notes this is read on by the simultaneous and cooperative provision of real and reactive power from the utility with compensation from 500 (with power from 400) which then switches to generator (100) and disconnecting utility (AC line, Figure 3)].

In regard to Claims 24 & 25

- A current control system (Fig 6) coupled with the STATCOM, the UPS, and the generator to provide control for the STATCOM, the UPS, and the generator, and a voltage control system (Fig 6) coupled with at least the UPS to provide control for the UPS.

In regard to Claim 26

- Wherein the control system include a detection and mode selection unit coupled with the current control system and the voltage control system (Fig 6) to signal the current control system and the voltage control system to activate and deactivate the current control system and the voltage control system (See Paragraphs 53-61).

In regard to Claims 27 & 29

- Wherein the STATCOM includes at least a voltage source converter (500) coupled with an energy storage unit (battery 400, See Paragraph 45) wherein the VSC provides at least reactive power injection or absorption (See Paragraph 47).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel Cavallari whose telephone number is 571-272-8541. The examiner can normally be reached on Monday-Friday 9:00am-5:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on (571)272-2800 x36. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Michael J Sherry/
Supervisory Patent Examiner, Art Unit 2836

DJC

April 7, 2008